Wachau and Danube restoration in Austria

Year of issue

2025

Summary

Within an Austrian LIFE Nature project, gravel banks have been established along the Danube in the Wachau, and dried site-arms have been reconnected. The measures aimed at improving biodiversity through providing spawning habitats, as well as controling erosion and run-off. As a particularity, the gravel used in the project stemmed from maintenance works for the shipping channel of the Danube. The project has been initiated and implemented by a local association (Arbeitskreis Wachau), which includes several communities.

All implemented measures of "LIFE Nature Wachau" are still operational and most of them were further optimized by additional projects.

The Sidebranch reconnections of Grimsing and Rührsdorf-Rossatz are still existent and working.

Sidebranch Grimsing was expanded upstream by a new sidebrach Schallemmersdorf and significantly lengthened in 2011 - 2013 as a result of the project LIFE+ Mostviertel Wachau (lead partner: Land NÖ, implementation: viadonau). Now the sidebranch system Schallemmersdorf – Grimsing has a length of more than 4 km in total. The connection to the main stream of Donau is still working at low water level. The sidebranch system now is an important spawning area and habitat for rheopilic fish species which are typical to the Danube. The sidebranch system and the alluvial forest enclosed by it continue to serve as flood area. Further measures to expand the sidebranch system are currently planned by municipality of Emmersdorf (implementation of a new oxbow at sidebranch Grimsing).

Sidebranch Rührsdorf- Rossatz was expanded downstream by a new sidebranch Schopperstatt and significantly lengthened in 2019 – 2022 as a result of the project LIFE+ Wilderness Wachau (lead partner: viadonau, implementation: viadonau). The new sidebranch system Rührsdorf – Rossatz - Schopperstatt has a length of more than 5 km in total. The connection to the main stream of Donau is still working at low water level. The sidebranch system now is an important spawning area and habitat for rheophilic fish species which are typical to the Danube. The sidebranch system and the alluvial forest enclosed by it continue to serve as flood area.

The Revitalized oxbow Aggsbach has silted up after a few years. Municipality Schönbühel- Aggsbach therefore initiated a new project in 2013/2014 (Strukturierung Altarm Aggsbach) to further expand the oxbow lake and make it available as a spawning habitat for stagnophilous fish species. The funktion as water reservoir has been restored.

The creation of flat gravel banks and gravel islands as part of the maintenance of the Danube navigation channel has been continued since "LIFE Nature Wachau" was implemented until year 2022 (implementation: viadonau). Currently, new official permits must be obtained in order to be able to continue the work in the future.

Today, the project is still relevant and working; project was (and still is) continuously expanded through follow-up activities. The ecological goals in the Wachau could / can only be achieved through the sum of several implemented projects and ongoing maintenance activities.

Photo Gallery









Location

48.393333, 15.455556

Project

NWRM

National ID

Austria_Life_Wachau

Sector

Hydromorphology

Installation Date

2008 (LIFE) but continued after until 2022

Implementation status

Completed

Overview

Location of the project

Wachau Valley, along the Danube River in Lower Austria, near Rossatz and Emmersdorf.

Country

Austria

NUTS2 Code

Niederösterreich

Sponge measures implemented in the case study

Reconnection of oxbow lakes and similar features

Stream bed re-naturalisation

Floodplain restoration and management

Objectives

• structure the main current of Danube: along 33 km of Danube; using 400,000 m³ of gravel
• reactivate lateral water systems: 9 km of running water biospheres near Grimsing, Rührsdorf, Aggsbach, Rossatzbach
• manage dry grassland: 100 ha regenerated
• maintain and improve wooded stocks which are relevant to the FFH: app. 158 ha
• create a Natural Protection Coordination function in Wachau: Spitz castle

Involved partners

Authority type	Authority name	Authority role	Comments
NGO	Arbeitskreis Wachau regional development group	Initiation of the measure	The Arbeitskreis Wachau is a cooperation platform of 13 communities of the Wachau as well as representatives from viticulture, culture and nature conservation.It is the initiator of the project, and also responsible for the implementation of the measures.
NGO	via donau - Austrian Waterways Association	Financing	via donau is digging gravels for maintaining the shipping channels. This material is being used to restore the gravel banks and islets within the project.
Other	Wachau community	—	Local communities
NGO	LANIUS association	—	—

Authority type	Authority name	Authority role	Comments
Other	Federal State of Lower Austria	Financing	Financing through the Lower Austrian Landscape Fund.
NGO	Lower Austrian Fisheries Association	Other	The angling club hat set initial impulses for the project and has showed persistent efforts to get the project accepted. Their local relationships were also important for getting the consent of numerous landowners. They have also contributed to the financing.
National water authority	Federal Ministry of Agriculture, Forestry, Environment and Water Protection	Financing	—

Site Information

Climate Zone

Warm temperate dry

Precipitation

633.00 mm

Temperature (°C)

8.40 °C

Runoff

1700.00 mm

Elevation range

200-210 m

Slope range

0-1%

Groundwater level

gauge Melk: Ø 206,15 – 206,4 müA gauge Emmersdorf: Ø 203,4 – 204,8 müA

Vegetation class

Wachau Valley (along Danube): forest / alluvial forest, agriculture, infrastructure (streets, railway, settlement area)
Surrounding Hills: dry hillside forests, vineyards, dryland grasses, rockfalls, infrastructure (streets etc.)

WFD Ecological status

Poor

WFD Chemical status

Failing to achieve good

Design and Implementation

Project scale

Meso

Project scale specifications

Measures were spread over a distance of app. 30 km of Danube

Size

6.00

Size unit

km

Principles

In terms of aquatic measures, fish habitats should be newly created or optimized, especially:
• New, wave protected sidebranches for rheophilic fish species
• New sidebranches which are connected to the Danube all year round (even low water level)
• Shallow, wave- protected gravel banks for spawning fish and juvenile fish
• Rights of third parties must not be affected (eg. flood protection, navigability of the Danube)

Constraints

• Ground ownership (if not owned by Republic of Austria)
• Restrictions of flood protection
• Navigability of the Danube
• Restrictions of nature protection (eg. limitation of construction time, compensatory measures)
• Restrictions of forest law (reforestation)

Favourable preconditions

Truncated remains of old dristributaries were available for reconnection. Gravel was available from maintenance works for the shipping channel of the Danube.

Financing

Total cost

5200000.00 €

Total cost information

The costs include also works to protect dry grasslands

Financing authorities

Authority name	Type of funding	Comments	Financing share
European Union	EU-funds: LIFE+	European Union financing through the LIFE Nature fund.	50 %
The Ministry of Agriculture, Forestry, Environment and Water Protection.	National funds	—	19.5 % (all Austrian public funds together)
The State of Lower Austria	Sub-national funds	—	19.5 % (all Austrian public funds together)
Arbeitskreis Wachau regional development group	Local funds	Contribution of the Arbeitskreis Wachau regional development group with communities and LANIUS.	19.5 % (all Austrian public funds together)
Various associations	Private funds	Contribution of the Lower Austrian Fisheries Association and the Austrian Waterways Association via donau.	30.5 %

Policy and Governance

Policy description

"Although the main river flows free, a dramatic loss of structural diversity has occurred within the past few decades: elimination of gravel banks and other interventions, and the disappearance of the lateral channels due to increasing sedimentation of cut-off river arms during the periodic floods" (Seehofer, 2008). The regulated open Danube offered poor habitat for spawning and survival of young fish. The project goal was to improve habitat by connecting dry oxbows to the Danube and to create 'man-made' gravel banks.

Land ownership

Danube: Republic of Austria (BWV, viadonau) Surrounding area: private, Austrian federal forests (ÖBf), church, municipalities, state of Lower Austria (Land NÖ), Agricultural communities

Policy targets

Improved Biodiversity

Erosion Control

Runoff control

Part of a wider plan

Yes

Wider plan

Wider plan type	Wider plan focus	Name	Comments
Catchment-based	Environment & Biodiversity	ecological renaturation potential on the Austrian Danube	Project of ezb - TB Zauner, commissioned by viadonau & government of Lower Austria (Land NÖ); Commissioned by viadonau & government of Lower Austria (Land NÖ);

Public consultation

Yes

Consultation activities

Activity stage	Activity type	Key issues	Comments

Implementation phase	Intensive media work	Amongst others, the project has organised the Austrian LIFE-platform in 2005 and was presented at various meetings, conferences and events. The project was also awarded the first prize in the Milestones - "Dr. Erwin Pröll" future prize in the "In Uniso with Nature" category.	—
Implementation phase	Networking activities	Networking activities have taken place with experts from Austria, Germany, Switzerland, Japan and Poland.	—
Implementation phase	Visits to target groups	—	37 visits to target groups have been made during the project.

Has contractual arrangements

No

Impacts and Monitoring

Monitoring System

Monitoring requirements

Fish monitoring of LIFE Nature Wachau was finished 2008. viadonau continued fish monitoring in relation to further LIFE projects and ongoing maintenance works on gravelbanks / gravel islands

Monitoring parameters

The development of bird and fish species has been monitored.
Methods:
• Electro fishing by boat
• Pole fishing
• Point Abundance
• Electric bottom trawl (partly)
• Longline
• Gill net / net fishing
Monitoring of ecological status in relation to WFD is ongoing by BMLUK

Maintenance

Maintenance requirements

Gravelbanks / gravel islands at the Danube is done by viadonau. Sidebranch reconnections & oxbow is regulated differently: partly done by viadonau, municipalities, federal forests of Austria (ÖBf)

Biophysical impacts: Hydrology

Restoring hydraulic connections

6000.00

Restoring hydraulic connections unit

meters

Information on Restoring hydraulic connection

6 km of former side-arms have been reconnected to the Danube.

Biophysical impacts: Biodiversity

Improved biodiversity

Yes

Information on improved biodiversity

One of the target species of the project has been the huchen (Hucho hucho). In general terms, spawning grounds for fishes and resting areas for birds have been improved. Significant improvement in fish biomass and ecological status (WFD) in long-term monitoring.

Biophysical impacts: Water & Soil Quality

Water quality overall improvements

N/A info

Soil quality overall improvements

N/A info

Ecosystem erosion control

Yes

Biophysical impacts: Others

Ecosystem impact climate regulation

Not relevant for the specific application

Lessons Learned

Key lessons

Within the LIFE Nature Project, different sub-projects have been successfully implemented in the Wachau. This included the establishment of gravel banks, and the reconnection of dried up site-arms. Based on the pilot project experience of reusing gravel dredged from the shipping channels to recreate gravel banks and islets in the Danube, a gravel plan has been set up that foresees that all gravel excavated from the navigation channel between 2005 and 2020 would be brought back into the Danube River. Both gravel structures and reactivated lateral river channels serve as spawning ground for the fish fauna and as resting and breeding sites for aquatic birds.

Barriers

Barrier type	Barrier role	Comments
Other	Secondary barrier	The implementation of the project needed the consent of over 20 local landowners. Difficult negotiations with landowners & complex / lengthy registration process in the land register
Legal obligations / restrictions	Secondary barrier	Restrictions of flood protection
Legal obligations / restrictions	Secondary barrier	limitation of construction time due to nature protection
Other	Secondary barrier	Hydrological risks during construction works
Other	Secondary barrier	formation of foam due to fine sediment deposition into the Danube
Other	Secondary barrier	large volume of sediment (stones, fine sediment etc.) is to be moved / transported

Drivers

Driver type	Driver role	Comments
Organisation committed to it	Main driver	The Arbeitskreis Wachau regional development group and the angling association committed themselves to the project and set initial impulses.

Driver type	Driver role	Comments
Public pressure	Main driver	Interest of local municipalities (fish deaths caused problems with tourism) Interest of fisheries associations
Legal obligations	Main driver	EU Water Framework directive (to gain good ecological status) Natura 2000 directives (good status for protected species, habitats)
Availability of subsidies	Main driver	LIFE Programme of EU

Success factors

Success factor type	Success factor role	Comments
Attitude of relevant stakeholders	Main factor	The commitment of local stakeholders has been crucial for launching and implementing the project.
Public participation	Secondary factor	The commitment of the local angling association was important to convince the more than 20 local landowners to make their land available.

Transferability

Trasnferable, important findings on fish ecology and the technical feasibility of measures can be transferred to other areas.

Basin characteristics influence

Touristic significance of Wachau - region which made population / municipalities recognize the importance of ecological aspects and aesthetics of landscape; Wachau has historical background of the fight against hydroelectric power plant near Rossatz.

Sources

Sources

Das LIFE Natur Projekt "Wachau"